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ABSTRACT

The thrust of this paper is to suggest that the major alternative to the present system of financing medical education is to allow tuitions to rise but to interfere in capital markets, so that students can finance their expenses. Any such system of student finance should: introduce an element of competition between schools and encourage more efficient education; ensure that all students of ability can attend medical school regardless of the ability to pay; feature income-contingent repayment so that students are not forced into high-paying practices; minimize the aversion to substantial indebtedness; and restrict the use of public subsidy to specific public goals. This paper concludes with a suggested system that builds upon the Economic Opportunity Bank proposal, giving out two classes of loans that would be repaid under different terms. To the extent the basic needs of curriculum development, financial distress, or construction support cannot be met through the bank proposal, direct aid to institutions must continue. The levels of subsidy can be substantially cut, but the strategy of multitarget public intervention will continue. (Author/PG)

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HOW SHOULD WE FINANCE MEDICAL EDUCATION?

by George E. Wright, Jr.

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I. Challenges to the Present System

In their major study of the financing of medical education, Fein and Weber found that only 4% of medical school expenditures was met by tuition.[1] Another 43% was covered by sponsored research projects. The remaining half of the costs was financed by a host of miscellaneous sources, predominantly a hodgepodge of federal, state and local grants which pay for half of the non-research expenditures of U.S. medical schools. Since the multi-faceted public funds constitute a mammoth subsidy to medical education, future doctors need pay only a fraction of the cost of their education.*

The existence and size of this subsidy has come under increasing criticism from sources within and without the Federal Government.[3] For example, one recent study concluded:[4]

> The evidence is overwhelming that the $3 billion subsidy legislated in 1971 is not necessary to assure an adequate supply of medical personnel in the long run. The existing shortage is rapidly on its way to elimination without it. There is strong evidence that the subsidies legislated between 1963 and 1970 were greater than was necessary to achieve their purpose in the long run.

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*There has been long standing confusion over the total cost of medical education. Two independent research efforts estimated the 1967 full cost to medical schools of four years of education at about $24,000. Two recent competing studies place the 1972 figure at $50,600 and $81,500. The former is the result of a massive Congressionally mandated study by the National Academy of Sciences and does not underwrite nearly as much research and patient care activities under education functions as the higher estimate developed by the Association of American Medical Schools. In contrast, the 1970 average medical student actually paid approximately $4,800 in tuition and fees for four years of schooling. This implies a subsidy from public and non-public sources of at least $45,800 for each graduate who is paying less than 10% of the costs of his or her training. See footnote 2 for sources.

Yet the whole structure of institutional support in The Health Professions Educational Assistance Act contributes only half of non-research federal appropriations to medical schools and less than 25% of all non-research public funding.[5] Thus, even if the H.P.E.A. programs were eliminated, we would still be left with the question of how the vast bulk of subsidy programs should be organized. Can we change the methods of public funding in order to encourage more efficiency, equity, and orientation toward social goals in medical education?

Beyond the question of alternative methods of public support, we need to ask how funds should be replaced if federal subsidies are cut back from present levels. While there is growing criticism of the extent and growth of public subsidies to medical schools, many medical schools themselves continue to encounter severe financial hardship. In 1971, the Association of American Medical Colleges testified that:[6]

> At the present time, financing the operations of our 102 medical schools is a disaster. In fact, one could label it, "sandbagging for survival." And the flood waters keep rising.... U.S. medical schools have been brought to the brink of financial chaos.

Prior to capitation, even prestigious schools such as Johns Hopkins required emergency appropriations to stay open. Even with the 1971 legislation, the Administration has had to continuously use the full limit of financial distress authorizations to bail out shaky schools. There can be no serious discussion of substantial cuts in public funding of medical schools without considering how some of these lost funds will be replaced.*

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*It is possible to argue that if subsidies are cut, schools will be forced to develop more efficient modes of education, and thus their need for funds will fall (see Kessel , footnote 3). To the extent this does occur, it will happen slowly and with considerable lags. The short-run question remains.

This paper is therefore written to stimulate discussion of two separate but interrelated questions:

1. Given the fact that we will continue public subsidies to medical education, what form should they take?

2. If we are to cut back on the amount of public subsidies, how are these funds to be replaced?

The answers to the first question suggest solutions for the second. We will therefore deal first with alternative forms of public subsidy and subsequently lead into methods of replacing subsidies.

II. Goals and Criteria

The key to analyzing the effectiveness of any subsidy program is first to make explicit all of the goals or purposes the public funding is expected to fulfill. Second, we must advance some agreed-upon criteria by which one can evaluate how well a subsidy meets its goals. Various testimony before Congressional hearings on federal assistance to medical education suggests five common justifications for subsidy which constitute the major purposes of the program:

1. Increase the supply of doctors. The nation faces a continuing shortage of medical manpower particularly in view of proposed national health insurance schemes. Subsidies are required to increase and maintain medical school output.

2. Open medical education to all qualified students regardless of parental income. This is particularly important in light of the unmet medical needs of underserved minority populations.

3. Encourage students to enter practice in primary care specialties and in underserved areas. This involves not only funding special curriculum and financial incentives to students, but constructing new schools in physician-short localities.

4. Prevent the bankruptcy and closing of medical schools in severe financial distress.

5. Encourage development of new curriculums with shorter training times, greater emphasis on patient care, and application of medical research.

How well does the present system of public financing measure up to these goals? One can attempt an answer to this with the aid of four commonly accepted criteria of performance.

EFFICIENCY: meeting the goal with a minimum use of resources, both in the broad sense of an entire economy and the narrower sense of a government budget.

NEUTRALITY: meeting the goal without artificially and unintentionally twisting the output mix or altering the quality of the product.

EQUITY: meeting the goal without transferring real income from poor to rich or establishing arbitrary differences in the treatment of students of equal status.

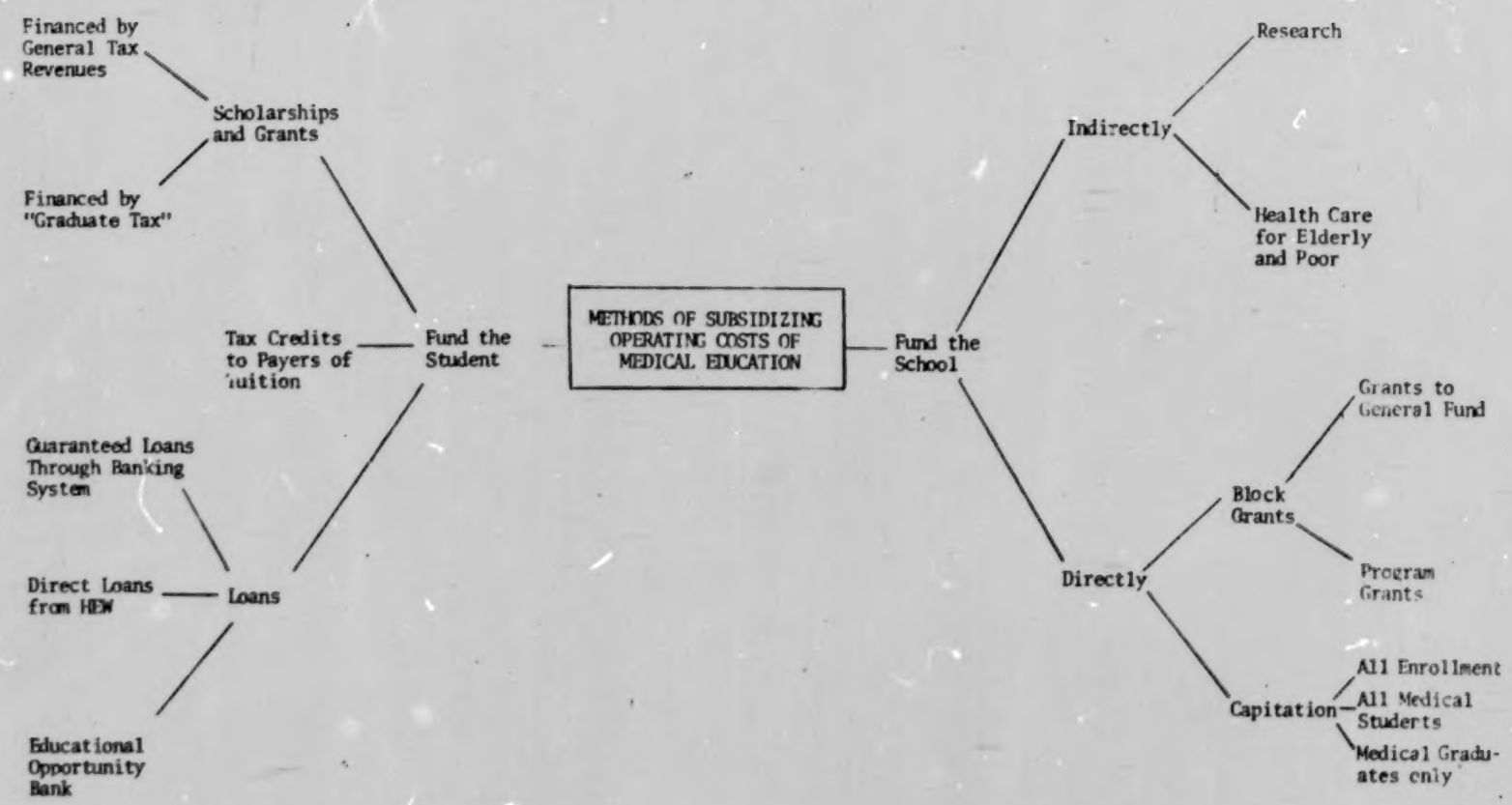
VITALITY: meeting the goal without accelerating the tendency toward organizational ossification. Programs should encourage new approaches and experimentation and not work solely for the benefit of entrenched interests.

Clearly, these criteria will not always yield unambiguous results in application. First, they are seldom independent of each other. (For example, vitality is a long-run subset of efficiency). More difficult, they often conflict. What may be a highly efficient subsidy can be hopelessly inequitable. A program which assures equity between income groups may be grossly unfair in that it treats unequally students of similar ability and income. Despite these ambiguities, however, we do have a framework for comparing the present system of public financing with various proposed alternatives.

III. Present System of Public Subsidies

There are two basic approaches to subsidizing medical education: fund the school directly and charge low tuition or fund the student directly and charge a high tuition. As Figure 1 illustrates, these two alternatives

FIGURE 1


METHODS OF SUBSIDIZING OPERATING COSTS OF MEDICAL EDUCATION
Fund the Student
Fund the School
Scholarships and Grants
Financed by General Tax Revenues
Financed by "Graduate Tax"
Tax Credits to Payers of Tuition
Loans
Guaranteed Loans Through Banking System
Direct Loans from HEW
Educational Opportunity Bank
Indirectly
Research
Health Care for Elderly and Poor
Directly
Block Grants
Grants to General Fund
Program Grants
Capitation
All Enrollment
All Medical Students
Medical Graduates only

subdivide into a spectrum of different possibilities for subsidy programs.* Quite clearly our present system of public support is a potpourri of most of the suggested approaches. Tax revenues are used for scholarships, guaranteed loans through banks, direct loans, large untied general budget support, grants for specific programs such as family medicine, curriculum development, and the like. Lurking in the background are annual inflows of $600 million for research which support students, construct buildings, and underwrite salaries and operating costs.** There is, however, such a jumble of federal, state, and local programs for financing medical schools that it is possible to determine neither the total flow of public resources for the undergraduate education of future physicians, the relative importance of the different subsidy strategies employed, nor changes in the total flow and pattern of subsidy. Even for the federal programs alone no accurate data are available on the amount and

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*There is a third alternative: fund neither the school nor the student but subsidize future physician income to keep the profession monetarily attractive despite the high training costs. This strategy has not been well developed in the literature and will thus not be emphasized here. It should be noted, however, that by itself this approach does not solve the problem of educational finance, is probably politically unpopular, and would require substantial public funds over and above the actual costs of education.

**The extent to which research subsidizes education or vice versa is hotly debated. In this connection, a recent AAMC study of medical education costs establishes as the norm that one-third of teaching faculty time should be devoted to research. The National Academy of Sciences study of costs implies that 27% of total cost was due to research activities and another 23% was attributable to patient care.. If research activity is financed by grants, then the scope for research support for education is considerable. There is additional growing support of medical school activities by federal Medicare and Medicaid funds for health services rendered. The amount of this is unknown, but total receipts from health care activities now totals over $120 million and is the single fastest growing source of medical school revenue (see footnote 7).

form of funds to medical education.*

In comparing the present pattern of support to Figure 1, however, two generalizations can be made. First, the primary thrust of public subsidy is in the form of grants to institutions. Comparatively few resources are placed at the disposal of students. In FY 1972, an estimated $159 million of federal funds was obligated to medical schools for the specific purpose of education and training. Of this, $23 million or 15% was turned over to undergraduate students in the form of loans and grants. What is more, the whole thrust of the Health Professions Educational Assistance program has been to increase the domination to institutions relative to students. In 1966 and 1967, when the program began full operations, for every H.P.E.A. dollar obligated to medical students, another was granted to their schools (not counting construction grants). By FY 1972, for every dollar of aid to students, six and a half dollars went to the school.[8]

A second and more tentative generalization is that public funding has tended to move away from both program specific and indirect funding (particularly through research) toward blanket subsidies for the operating budget. From 1958 to 1967, federally sponsored research in medical schools grew spectacularly from $74 to $390 million. Since then research funding has stagnated, so that by 1971 funding stood at only $366 million.[9] The ability of medical schools to underwrite the <u>growth</u> of their costs with research grants has been virtually eliminated. Meanwhile, since 1967, state and local grants, which are often

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*The extreme difficulty in locating the total flow of federal funds to the undergraduate education of M.D.s stands in contrast to the Congressionally mandated contract with the National Academy of Sciences to conduct a two-year intensive study of the cost of all health professional education. A companion effort to pin down the actual federal, state and local subsidies to medical education seems indicated (see footnote 7).

undifferentiated budget support, jumped from $223 to $311.8 million. In the same time period, basic budget support from the federal government increased from less than $20 million to almost $150 million annually.[10] This increase reflects the growing role of capitation in medical school financing. Although this method of funding gives the impression of being tied to the specific program of undergraduate education, in reality the payments form only a fraction of the costs of education, are unrestricted as to use, and can be treated as part of general operating funds for use as directed by school budget committees.

We have, therefore, an ad hoc system pieced together over time in response to differing pressures and needs. This is not necessarily a poor strategy. Indeed, the two publications on medical school financing sponsored by the Carnegie Commission on Higher Education strongly recommend that the multi-faceted approach to public support be emphasized and strengthened.[11] How well does it meet the goals outlined above?

There can be no doubt that the production of M.D.s has increased substantially. First-year medical school enrollments have increased from 8,300 in 1960 to an estimated 15,540 by 1977. Indeed, there are growing fears of a doctor surplus rather than shortage.[12] The problem is that this increase has been purchased at enormous cost. In another study, we have estimated that currently each physician graduated in excess of 1966 levels of output costs the Federal Government alone almost $90,000 in additional subsidies.[13] This figure is way above even the most liberal estimates of the full cost of four years of medical education.

Clearly, this is a very inefficient subsidy with two basic flaws in strategy. First, in order to encourage the education of additional M.D. students, we

subsidize all students. Professor Paul J. Feldstein has emphasized the same difficulty in the federal funding of dental education.[14] If the goal of subsidy is to increase the number of students, it makes little sense to support both the undecided student who would not attend if higher tuition were charged and the highly committed student who is planning to enter the profession regardless of the change in subsidy. A second major source of inefficiency is that the vast bulk of public funds for medical education is devoted to operating costs. The bind, however, has been in expanding capacity since there is no shortage in the numbers of highly qualified applicants. Subsidizing operating costs of full-capacity schools in lieu of raising tuition does not increase the number of physicians; it merely increases their real income.[15]

The problem of efficiency is severe for all of the goals set for subsidy programs. For example, we do not wish enormous tuition costs to eliminate students of low and moderate income. Yet, again, blanket capitation payments for students regardless of income or access to family loans is a highly expensive method of aiding those in need.

The central issue in health manpower is fast becoming geographic distribution. Toward this end significant resources have been devoted to establishing new medical schools in physician-short areas. Yet substantial aid has been extended to new schools in comparatively well-served areas (e.g., Rush in Chicago, Michigan State University, University of Toledo, University of Massachusetts). More important, the whole strategy of subsidizing schools in order to attract doctors is dubious at best. Studies of the determinants of physician location have consistently found a weak role for the location of medical schools. Only 45% of active physicians practice in the state in which they attended medical school. States with severe shortages often have the most difficulties.

Only 23% of the graduates of Nebraska's two medical schools end up practicing in that state. In Vermont the proportion falls to 12.6%.[16]

If the present system of public financing of medical education does not score well on efficiency grounds, the other suggested criteria do not lend much support. Certainly on equity grounds the subsidies are most unfortunate. Taxes levied on a population of moderate means are used to finance the education of children from comparatively well-off families, who upon graduation enter the highest paid profession in society. The more inefficient the subsidy system operates, the more objectionable these equity considerations become.

On the criterion of neutrality, one encounters the frequent criticism that the heavy financing of research has turned medical education into a by-product of scientific inquiry. Students, faculty, and facilities are all supported as a sideline through research funds. The heavy dependence of so many faculty on soft, "externally sponsored" funds diverts their effort and commitment away from the medical school as a teaching institution. Perhaps the drift toward blanket support of all medical school operations suggested earlier may right this imbalance. Can we, however, expect a significant change in the form and content of M.D. education if some strong incentive structure does not exist to stimulate and channel the change?

This suggests the final problem of vitality. Fein and Weber conclude that "the existing funding structure does impede change."[17] School budgets are still dominated by restrictive grants, with the dean's office often having very little control over faculty who largely all rate their own time and effort. The funding structure helps create a myriad of fiefdoms defending entrenched interests. Particularly under conditions of a budget squeeze, new activities are undertaken only if additional external support is located. Resources are seldom reallocated

from existing programs.

IV. Alternative Strategies

As outlined above, our present system of aid to medical education is a composite strategy with assorted programs of aid channeled directly to both students and institutions. Ideally, students receive subsidies directly if this is the most effective and efficient manner of obtaining a policy objective. Likewise, other objectives require that students be bypassed in favor of the institution. Thus, support for increasing low-income minority enrollment and grants for experimental curriculum development utilize different recipients. We have, however, demonstrated that aid to students plays a minor and declining role in subsidy strategy (see p. 6). Moreover, the predominance of past opinion has strongly supported a minor role for students as the vehicle for public support. Fein and Weber, for example, explain that if the goal of expanding medical education is met by subsidizing students, we must rely on medical schools to capture the subsidy by raising tuition. They therefore conclude, "We see little merit in using the student as a fiscal intermediary or 'pass-through' mechanism and favor providing the subsidy designed to expand resources directly to schools on a per-student basis."[18] The Carnegie Commission on Higher Education goes even further by not only flatly rejecting any tuition increases but formally proposing that all tuition charges be cut to a uniform $1,000.[19]

This fundamental system of low tuition supported by subsidies to institutions offers the broadest area for introducing alternative mechanisms of public support. We could switch the emphasis away from schools to students, allowing tuition to rise while supporting the student with increased grants and/or loans. The basic choice in subsidy is clear. Should we fund the school or fund the student?

A. Subsidies for Schools

If we continue the present emphasis on institutional support, there are two major issues which should be reconsidered: construction grants and capitation. Expansion of enrollment, introduction of new curriculum, training in new techniques, and renovation of antique facilities generate an almost continual demand for new construction. The response to these needs on the state and federal level has always been the appropriation of cash grants. There has, however, been an increasingly obvious reluctance to continue construction aid, and the reasons are readily apparent. A cash grant for construction appears to the institution as a virtual free good. Being costless to the school, there are only weak incentives to economize – to plan less elaborate facilities or use the existing plant more intensively (e.g., night and weekend classes or larger lecture classes in one room). Physical buildings are only one input of many into the complex process of education. If buildings alone are directly provided free by the public treasury, there is a natural tendency to use physical plant extensively while economizing on other inputs. Singling out construction for special treatment is not neutral. It helps create a never-ending avalanche of pleas for new and improved facilities.

The obvious response to these criticisms is that medical schools have very limited access to normal mortgage markets. Particularly when a whole new school is under construction, administrators have no choice but to turn to the government. This is true, and public involvement is necessary. It does not follow, however, that the public treasury must continue to provide cash grants. Other alternatives are available. First, a Higher Education Development Fund could be established whose original capital would be tax financed, but whose disbursements for construction would be made as formal loans. A subsidy component could be added by

charging a low rate of interest.

A second alternative has already been introduced in the form of the loan guarantee and interest subsidy program created by the federal 1971 Comprehensive Health Manpower Training Act. The goal is to tap the private mortgage market by guaranteeing construction loans and reducing interest charges by up to 3%. The program, however, has remained a dead letter. Between FY 1972 and 1974, only $2.8 million in interest subsidies was even appropriated (less than 1% of construction grants), and of this amount only $68,000 was ever obligated.[20] The reluctance of medical schools to undertake mortgage funding even in the face of constricted federal grants can be explained by the growing availability of state appropriations, continued philanthropic support, and mortgages which are short term, entail rigid amortization schedules, and carry high interest costs.

An alternative to these disadvantages is the issuance of bonds which are longer term, can carry flexible repayment, and have potentially much lower interest charges. If this proposal sounds novel, one need only point to the increasing use by universities of bonds for financing revenue-generating projects (e.g., dormitories and athletic facilities). More dramatic is the sudden rise in hospital use of capital markets to finance renovation and expansion.[21] With the stagnation of philanthropic and public support, non-profit voluntary hospitals have been forced in the last decade to turn to traditional capital markets for financing. The result has been the creation from scratch of a new capital market and the development of an original network of brokerage houses and underwriters specializing in hospital finance. Over 40% of nonprofit hospital construction is now financed through the normal market mechanism.

A similar potential exists for medical schools, although capital market

finance may be limited to revenue-producing assets such as contract research laboratories or hospitals and clinics. The role of the government for intervention and subsidy still continues. To make medical college bonds salable at terms more favorable than a standard mortgage, public guarantees, interest subsidies, and/or tax exempt status (as with municipal bonds) may all be necessary.

There are three major advantages to the use of either a development fund or capital markets. First, the construction needs of medical schools are real and continuing. The ability to finance and undertake vital projects should be free from external and continuously variable considerations such as budget balancing on the state and national level. Second, the reliance on a loan mechanism places an increased value on construction and provides an incentive to use facilities more intensively and to limit capital expansion. Third, a new building yields a stream of services over an extended period of time to particular constituencies served by a medical school. Loan repayment allows the school to distribute the actual cost of operation more equitably between research and health care, M.D. candidate and basic science post-doctoral fellow. If a building is converted from one use to another, the pattern of repayment follows apace.

This complexity of medical school functions suggests the major issue confronting the strategy of capitation. Capitation for medical schools was introduced to help stabilize their financial condition and more importantly, to stimulate and support the production of new physicians. The basic paradox of this approach is that even disregarding research, medical schools apparently devote a minority of their institutional effort to training M.D. candidates. The latest data for the academic year 1972-73 show that against a total

enrollment of 47,546 medical students, schools had responsibility for 38,475 students (full-time equivalents) in non-M.D. health professions and the basic sciences and an additional 32,556 interns and residents.[22] These figures should be interpreted in light of three trends. Even with capitation, non-M.D.s have continued to increase as fast as M.D. enrollment. Many non-M.D. students cost more to educate than M.D.s. Third, non-M.D. education costs may be rising faster than expenditures on medical students.[23]

The non-M.D. education programs may be desirable, but the fact remains that their tuition levels are far below costs. Who, then, is paying for their education? Capitation emerges as a system whereby a host of training programs are all potertially sheltered under the financial umbrella of the medical student. This is clearly a very uncertain method of subsidizing health education. It does not allow society to make any judgments about the relative value of the various training programs. If different types of students require substantially different drains on resources, a flat-rate capitation will still leave in financial difficulty schools having the "wrong" student mix. Thus, one alternative to the present system of capitation is to develop separate support levels for medical students, pre-doctoral basic science students, paramedics, interns, and so forth. The problem with such a program is not only the obvious administrative complexity, but the fact that grants would not necessarily be channeled into the programs designated for support. This difficulty suggests the major alternative to the present system to which we now turn: instead of directly supporting institutions in the name of various categories of students, simply fund the students directly.

B. Subsidies for Students

The proposal for financing all higher education, which has been drawing increasing attention, suggests that institutions charge full-cost tuition which would be covered by fully funded financial support for students.[24] In terms of medical schools, numerous variants are possible which retain the traditional multiple strategy approach. For example, continue direct aid to institutions for programs such as financial distress or curriculum development while converting all capitation to student support. In this connection, it is not clear why the Carnegie Commission was so adamantly opposed to letting tuition rise. Indeed, allowing tuition to reflect somewhat more accurately the cost of education can reap several potential benefits in terms of the four criteria outlined previously.

First, the equity of the system could be vastly improved. By charging substantial tuitions while offering grants or loans-in-aid on a sliding scale according to family income, the thrust of public support would no longer contribute so heavily to the improvement of the wealthy. All students of ability could attend regardless of ability to pay.

Second, raising tuition rates while providing the student with the means of meeting these charges puts "purchasing power" into the hands of our future physicians. It gives them a dollar vote to counterbalance the seductive call of research grant and health care reimbursement; that is, shifting the strategy of subsidy can help make the system of public support more neutral. The present system pays specifically for research and health care but supports education with basically lump-sum grants into the general fund. There is little incentive to emphasize education, and legal requirements specifying increases in enrollment as a condition for payment answer none of the problem of the content of

education. Giving the student the resources offers a concrete incentive to meet educational demand.

Third, the efficiency of medical education could improve. To the extent that aid would not cover the increased tuition for all future M.D.s, we could expect students to shop around among schools more. The institution offering a high-quality education at a lower price would attract better students, providing an incentive for other schools to follow suit. More intensive use of existing facilities, larger lecture sessions in pre-clinical classes, and increased use of existing university departments and community hospitals are all possibilities.[25] Nor does the potential for increased efficiency stop with costs. Programs designed to meet specific goals such as encouraging family practice and commitment to underserved areas would become more effective. Instead of blanket support for departments of family practice, particular aid to specific students committed to primary care would allow the student to originally choose or to transfer into the school offering the best program. Substantial tuition costs covered by student loans would make loan forgiveness programs increasingly attractive, whereas they now are rather ineffective.[26]

There is indeed a central thread running through this limited discussion of the potentials for a shift in favor of subsidizing the student. Professor Reuben Kessel has characterized the present system of finance as a "non-system," whereby no means are offered to directly translate student desires for education as a whole or for particular emphases in training programs into a significant input into medical school decision making.[27] In terms of public policy, this non-system means that if we wish to change the type of M.D. being graduated, we pay the school, which adds on a new program — which only then searches for the students. Little incentive is ever effectively offered the student.

Such an approach is inherently inefficient. Moreover, since medical students traditionally have been rather open to changing social demands, a subsidy policy which bypasses the student has not contributed to the vitality of medical schools.

These general arguments in favor of shifting the emphasis from school to student are cogent and persuasive. As with any approach, however, there are some difficulties. The first is political vulnerability. There is a long tradition supporting the public financing of medical schools where the subsidy meted out to individual students is buried in general support. If this level of support is switched over explicitly to the future physician, whose high expected income is well known, there is substantial room for public resentment.

A second difficulty concerns the basic strategy of public payments explicitly for education. While it is true that medical schools carry on a host of activities apart from the education of physicians, it is not always possible to separate out these varying functions for separate funding. The experience afforded post-doctoral Ph.D.s in basic sciences, the experimentation in new styles of patient care, or the leadership provided in community health planning are all examples of valuable services for which we really have no mechanism of reimbursement. Similarly, how is the education of residents and interns to be financed? Currently, medical schools incur substantial obligations, and we cannot alter the situation until the entire system of graduate medical education is restructured. These considerations suggest that there is a continuing need to finance services under general appropriations. Moreover, to the extent that health services, research, and M.D. education are produced by a truly joint process, it is actually impossible to disentangle and fund the student solely for education.[28]

None of these concerns, however, argue against moving in the direction of student rather than institutional support. They do argue for the continuation of a mixed system of funding both the student and the school directly. Once the approach of allocating a tuition grant to every medical student is accepted, the strategy can be expanded and all the various categories of students can be similarly funded according to the relative costs of their training and the relative value society places on their services.*

V. Replacing Public Subsidies

If Congress and state legislatures should decide that present levels of public support are too high and should be cut back, how is the lost financing to be replaced? Medical schools argue vociferously that a sudden cut in support will produce not an instant disappearance of "waste" but a cut in desirable services.[30] Moreover, if public funds are substantially cut, then tuitions must rise; and students already have difficulty meeting these costs.

The clearest method of replacing present subsidies is to let tuition rise, but then to enact programs which ensure that every student can finance these higher expenses. In the previous section we suggested a tuition grant system

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*There is an additional problem which is so broad that it requires subsequent treatment in full. If the tuition grant system actually engendered inter-school competition for students, what would happen? Would students refuse to pay for necessary research or curriculum development that does not affect them? Will some schools be unable to attract quality students and collapse? We need only note briefly here that there are far more qualified applicants than places and that the problem of schools in financial distress has not been solved by the capitation system. Indeed, some poor schools have received less support than before (see footnote 29).

financed out of general tax revenues. If we wish to eliminate or reduce the subsidy element, then the grants would be financed from a trust fund which would be replenished at a later date by payments from doctors who had started practice.

In constructing such a system there is one central constraint. Saddling a physician with an enormous repayment obligation virtually forces him/her into high paying practices. It becomes exceedingly difficult to entice graduates into primary care or underserved areas.* On a broader level it increases the physician's concern with the monetary rewards of practice. As one disgusted medical student has noted:[31]

> Medical students have been viewed as future bankrolls ....You of all people can afford to borrow unheard of amounts against your future. Those who permitted this subtle form of indenture to evolve have gotten exactly what they wanted, economic entrepreneurs, not doctors, not practitioners of medicine, not altruistic healers but MDs who take advantage of every tax loophole by refurbishing the office annually and gouging guess who for it.

Clearly, the system of repayment must be income contingent — high incomes pay more, low incomes less.

This necessity of developing a neutral system — one which does not discriminate against moderate-income practices — is the chief limitation on the extension of the present guaranteed loan programs. Some proposals have suggested protecting the loan recipient from low incomes or making repayment contingent upon income.[32] As we shall see, however, such options are exceedingly complex, and it is difficult to see how they could actually be

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*A large educational obligation will make forgiveness provisions increasingly attractive. It does not, however, provide any stability to rural care and forces into primary care M.D.s clearly unsuited for non-specialty practice.

implemented using commercial financial intermediaries. Moreover, recent experience has shown the limitations of the guaranteed and/or subsidized loan program. Loans are often conditional upon a student's individual relationship with a bank. They are time consuming and complex to administer. The long-term decision to enter a medical career should not be influenced by short-term fluctuations in interest rates or credit availability. Moreover, some students of low or moderate income may forego medical school simply because they are already heavily in debt and/or have used up the Office of Education $10,000 loan limit for financing their undergraduate training. It seems clear, therefore, that if we wish to facilitate the payment of full-cost tuition with an income-contingent future obligation, we must examine other alternatives. There are two major proposals for repaying the costs of education while tying the payment obligation to income. The first is a proposal from Britain for a Graduate Tax.[33] Each student would be given a grant by the government to cover the full cost of resources devoted to his or her education. The grant would be repaid by an income surtax imposed over the lifetime of the physician. There are numerous advantages to this approach, since it avoids difficulties with large formal indebtedness and facilitates nondiscrimination against low paying but socially desirable specialties and practices. In the U.S. context, however, such a tax is clearly discriminatory and unconstitutional. We must therefore focus on the major alternative — The Economic Opportunity Bank (E.O.B.).

Although this bank was originally proposed almost twenty years ago for all higher education, its only concrete applications so far have been the deferred tuition experiments at Yale and Duke.[34] In the meantime the creation of such a bank has been proposed exclusively for medical students.[35] The

operation of such a bank radically differs from the present loan programs in that current borrowing entails legally binding obligations for repayment which are not necessarily fixed in either total amount or annual installments. The basic E.O.B. concept is simple enough. A student contracts loans over a four-year period to cover tuition and/or living expenses. Repayment is made in annual installments which are assessed according to a fixed percent of adjusted gross income. The proportion to be paid is determined as a percentage for each $1,000 borrowed (e.g., 0.5% of income per $1,000). Physicians with low lifetime incomes would not repay all of their loans and in effect would be subsidized by their high-income peers.

This fundamental principle, however, entails a host of complexities, and discussions of the proposal are becoming increasingly involved. For example, should a limit be set on how much a high-income earner should repay beyond his actual obligation? If so, how is the limit to be defined? In all cases, how can adverse self-selection be prevented, with M.D. candidates having low income expectations taking full advantage of the provisions and those expecting high incomes avoiding the plan altogether? Should the E.O.B. therefore be made mandatory? Should separate E.O.B.s be established for physicians, dentists, Ph.D. chemists, masters of social work, etc.? If not, will their high income place M.D.s under an enormous burden? If so, how can such a complex of banks be administered, and what can be done with students who switch careers?

We could continue elaborating this list of thorny questions, but cataloging complexities would mask the major difficulties that limit the role of an E.O.B. in its present consideration as an alternative to current public funding of medical education. First, even a physician's relatively high income has a finite limit on its capacity to support legal liabilities. A new physician with a

relatively low income must take on a housing mortgage as well as financing on an office and equipment. A huge educational debt overhang may limit access to normal channels of long-term credit. This problem is particularly acute for the young doctor in a non-urban area where the opportunity to buy into a partnership is limited. Second, we have stated that one of the primary goals of any system of finance is equal access to all of ability. Allowing every qualified student to enter medical school regardless of background is one of the chief assets of a system of tuition grants to all students. Yet if the grants become an enormous educational mortgage, we frighten away from the medical profession all who have a strong aversion to indebtedness. A lack of self-confidence, a tradition of economic insecurity, a bad parental experience with debt, and high risk aversion all encourage the rejection of substantial indebtedness even though a future M.D. would be perfectly willing to accept the lower income required to repay the cost of education. The mere willingness to bear debt is irrelevant to the quality of a future M.D. or even to the willingness to bear the cost of training. The use of loans to finance the full cost of education is in fact non-neutral and establishes a rather arbitrary barrier to entry. This is particularly true if, as is often maintained, minority students are exceedingly reluctant to take on substantial indebtedness.

The third problem is perhaps the most difficult. Can an Economic Opportunity Bank actually meet the full cost of education? A recent article has simulated the operation of an E.O.B. using age profiles of physician income, a limitation on what any physician could pay in excess of his actual loan, an 8% interest rate, and a charge of 0.5% of physician income for each $1,000 borrowed.[36] Under such a program a high-income earner could redeem a $10,000 obligation in nine years with total payments of $16,780. A low earner would

repay $46,000 in 25 years. Limiting payments to 7.5% of income per year would restrict the maximum capacity of program to $15,000 per individual in loans. The problem is that medical education is vastly more expensive than $15,000. The most recent study estimates the full average cost for four years as over $50,000, and this does not count the $15,000 to $20,000 needed to finance living expenses.[37] A $50,000 educational mortgage under the model bank suggested above would push average repayments to 25% of income a year.[38] This is a substantial reduction in lifetime physician income, and even though the percentage rate per $1,000 is the same for all income groups, the debt load would indeed encourage movement away from low paying practices.

The high required percentage highlights an additional problem. How are repayments to be treated for tax purposes? Normally, interest payments are deductible from taxable income. A full-cost tuition loan of $50,000 at 8% over 25 years could entail a total of $100,000 in interest. If this is deductible, the taxes not paid not only form a substantial subsidy to M.D. education, they form an implicit subsidy in favor of the high-income physician. The higher the tax bracket, the higher the marginal tax rate, the more a physician's education is subsidized. Indeed, with deduction a high-income physician pays a smaller proportion of his income than his low-income classmate with the same loan. If this perverse effect is corrected by allowing no interest deductions, the consequences are still with us. The 25% mentioned above, added on to state, city, and federal income taxes forms a very high rate of taxation and the potential for substantial misallocations.

Much of this problem of high cost is due, of course, to interest charges. The interest rates could be subsidized, but this would create the difficult problem of controlling access to loans. A comparatively wealthy student would

find low interest, deferred repayment loans of $20,000 or $30,000 a highly attractive opportunity for financing home mortages or investments.* Even the present modest N.D.E.A. loans have difficulties with diversion to non-educational purposes.

Perhaps more important, subsidizing interest rates can be an enormously expensive proposition in terms of a government budget. How much would the Federal Government save if instead of granting each student $2,500 a year, it converted the support to an interest-free 30-year loan (5 years grace period, 25 years to repay)? Four years of grants would cost the taxpayer $10,000. Under a loan, the $10,000 would be repaid but the present costs would have to be met now. One means of meeting these costs would be the issuance by an E.O.B. of 30-year bonds. Similar bonds issued by the Federal Home Loan Bank carry an effective yield of almost 8%. Even at a 7.5% rate the interest costs not paid by the student would total $22,500.** These interest charges can quickly burden

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*If all medical students were receiving annual loans of $10,000 at 3% interest with deferred repayments, we would create an annual pool of almost $500 million of cheap credit. The opportunity for arbitrage is obvious. An enterprising financier could receive the loan from the student, pay the tuition, pay the student a 5% premium, and still make a profit.

**If this is discounted at an annual rate of 8%, the present value of interest not paid by the student is $8,443 vs. the $10,000 in an outright grant — a 15% saving on tax revenue. At a 6% discount rate it is cheaper to simply make a grant than to go through the routine of an interest-free loan. If the bank chose not to issue bonds but to solely use general revenues, the effect would be the same, in that given present government programs and tax structure, the $10,000 would be an increment to a budget deficit financed by long-term treasury bonds. Note, however, that this analysis applies only to the effect on government budgets, not to the society as a whole. See footnote 39 for details.

the budget. If instead of present federal subsidies, an E.O.B. issued interest-free loans to every student of even only $5,000 per year, by 1985 the annual interest not paid would cost more than the entire present package of H.P.E.A. federal aid to medical education![40]

Two final issues must be dealt with in the actual design of an Educational Opportunity Bank. First, one of the major purposes of the bank proposal is to allow financing of training without discouraging students from entering moderate income practices. But this will occur only if the percentage of income paid toward education is the same for all doctors. Yet the bank only requires the same percentage per $1,000 actually borrowed. To the extent that low-income students require more support than those of high income and yet tend to enter comparatively low-income practices, the bank is decidedly not neutral.

The second issue is the whole basic conception of the bank as both self financing and nondiscriminatory against low-income practices. These two goals can only be accomplished by having wealthy doctors subsidize "poor" ones. The question is, why? Why, in fact, should a talented neurosurgeon in New York subsidize the training of his perhaps not-so-brilliant classmate in a rural family practice? The argument is made that the high-power specialist is the beneficiary of a system which does not fairly remunerate referring physicians. Moreover, he/she has unique monopoly power to raise fees.[41] This is indeed a weak case. Irrespective of specialties, the hardworking physician would subsidize the doctor who, prizing more leisure, would carry a smaller case load. Since income is the criterion, M.D.s with substantial outside business interests, inheritances, or wealthy spouses would subsidize purely medical incomes.

The reason we desire an income-contingent means of paying for education is that a system which does not encourage the avoidance of comparatively low paying

practices is in the interest of society as a whole. We do not wish to encourage the entrepreneurial aspects of medical practice. Nor do we wish to erect further obstacles to expanding the supply of doctors in primary care and in underserved areas. These are surely legitimate goals; but since they are in the interest of society as a whole, why should the cost of meeting them be borne solely by the wealthy physician? There is no clear logic to this strategy.

VI. Conclusion: A Suggested Approach

The thrust of this paper has been to suggest that the major alternative to the present system of financing medical education is to allow tuitions to rise but to interfere in capital markets, so that students can finance their expenses. Any such system of student finance should:

1. introduce an element of competition between schools and encourage more efficient education.
2. ensure that all students of ability can attend medical school regardless of the ability to pay.
3. feature income-contingent repayment so that students are not forced into high-paying practices.
4. minimize the aversion to substantial indebtedness.
5. restrict the use of public subsidy to specific public goals.

These five desirable features are not only difficult to attain simultaneously; they can also conflict, as we have illustrated in discussing the Economic Opportunity Bank. Indeed, since no means of finance can meet all of these specifications perfectly, compromise is inevitable. This paper therefore concludes with a suggested system which builds upon the E.O.B. proposal.

The bank would give out two classes of loans which would be repaid under different terms. The major loan, a Basic Tuition Credit, would be a block grant to the schools in the name of each participating student. The goal would

be to meet the minimum basic costs of education - $10,000 a year, for example. This Basic Tuition Credit would be the same for all students and would be given on a take-it-or-leave-it basis. That is, a wealthy student would not be able to contract for only $5,000. This should ensure that virtually every student will participate and allows a system of repayment whereby every graduated doctor pays the exact same percentage of his income. This guarantees neutrality as to choice of future practice and specialty.

Repayment would be made via the IRS in conjunction with income tax returns and would be specified as not tax deductible. The plan has two unique features. First, it would formally charge a zero or very low rate of interest. This is possible because if payments are stated as a percentage of income, the annual installments will rise as average physician income increases. There is, therefore, a built-in interest rate — and, in fact, average physician incomes have been rising at a rate of at least 8% a year.[42] The second feature is that the Basic Tuition Credit portion of the plan would not necessarily be self financing in that low-income doctors would not be expected to repay the whole credit. Nor would high-income physicians be charged the entire deficit. This could be accomplished by setting the break-even income above average physician income. For example, annual income for all physicians, including interns and residents, now averages about $32,000.[43] Repayment would start immediately after graduation and would continue until age 65, or about 40 years for the typical doctor. The principal of four years of a $10,000 Basic Tuition Credit could therefore be fully repaid at $1,000 a year. Setting the break-even income at $40,000 rather than the average limits the subsidy contributed by wealthy physicians and suggests that any participating physician would subsequently pay 2.5% of his income until age 65. Depending on how fast average incomes rise, low-income doctors may never

repay the $40,000, and interest and principal are subsidized by both the high-income physicians and the public.

This proposed flat tuition grant will not, of course, meet the needs of all students at all schools. Out-of-pocket expense for four years of medical school now averages $24,000.[44] Full-cost tuition in some schools may run as high as $20,000 a year.[45] To finance such additional expenses, the bank would issue Supplemental Education Credits. These would be negotiable in that the individual student would contract annually for whatever amount he/she required. They would carry a full interest rate in the neighborhood of 8% and would in most cases require full repayment. Nor would any physician be liable for more than the actual obligation. Repayment, however, would still be income conditional and computed as a flat percentage of income charged to all participating doctors. The percentage would be charged annually until the principal and interest were paid off.

Table 1 illustrates the repayment of a $10,000 credit obtained for living costs and tuition above the Basic Tuition Credit. Regardless of the level of

TABLE 1: Hypothetical Repayment Schedule of a $10,000 Education Credit

Year	Principal Outstanding	8% Interest Charges on Principal Outstanding	Physician Income	Payments at 3% of Income
1	$10,000	$800	$20,000	$600
2	10,000	800	25,000	750
3	10,000	800	30,000	900
4	9,900	792	35,000	1,050
5	8,592	687	40,000	1,200
6	8,079	646	42,000	1,260
7	7,465	597	44,000	1,320
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
14	1,014	81	44,000	1,320

indebtedness, the physician continues to pay 3% of income, so that as income rises so do payments. For example, in year 3 a $900 payment more than covers the interest charge, and the principal is reduced by $100. From then on the physician's payments continue to rise with income until earnings stabilize at $44,000. At this level the Supplemental Education Credit is repaid in year 14. From then on the 3% payment is dropped but the percentage for the Basic Tuition Credit continues.

Note that in the first two years payments do not even cover interest charges. The short fall of $250 is never repaid by the physician. This public subsidy is one form of protection for low-income physicians. They need never face cascading interest charges. A second form of protection is in setting the percentage rate of repayment low enough so that low-income physicians need never repay a large credit. A third protection would be to establish annual credit limits which, when filled, would qualify a needy student for automatic scholarship support.

This system of repayment is somewhat cumbersome but not impossible to administer, and its advantages are several. First, by charging a full interest rate we do not open up the program to distorted uses, we encourage full use of other financial resources, and we subsidize only according to need. Second, by charging a flat rate of income and allowing the length of time for repayment to vary, we do not discourage young physicians from attempting new practices which may not be financially rewarding. Third, by making these credits variable, we offer an incentive for students to demand more efficiency from their medical schools. This allows a school with little research but a strong educational product to be paid for what it does best — teaching. Fourth, while the student is contracting a substantial educational mortgage, he/she is so protected from

the risk, uncertainty and burden of indebtedness that individual debt aversion is minimized. Indeed, although every dollar of the obligation is voluntary, and is a legally binding debt, repayment functions more as a tax than a debt schedule.

Despite the potential advantages, the actual implication of this very idealized proposal will be difficult. Setting actual percentages, cash flow financing, postponements for residency, policy toward non-M.D. students, etc. are far from simple procedures. More important, its operation requires the cancellation of all present public subsidies to medical education. The leverage, however, of the federal Health Professions Education Assistance program is really quite small here. Since state governments contribute much larger subsidies to medical students, the proposal requires a halt to state support as well, and this involves the fundamental question of state vs. federal role in the supply of health manpower.

Finally, there is the problem of acceptability by medical schools and medical students. In this connection, the 1974 annual meeting of the Student American Medical Association offers some hope that medical students are willing to consider fundamental changes in the method of finance.[46] The dominant theme of the meeting was consideration of a proposal by the Association's past president that serious consideration be given to halting direct subsidies in lieu of some form of repayment via service obligations or an Economic Opportunity Bank.

Thus, the climate of opinion is growing toward acceptance of at least an exploration of new alternatives. Certainly Congressional leaders and Administration spokesmen have expressed the belief that public subsidies must be much more closely tied to achieving public goals, and that the present

system is poorly suited to this end.[47] The probable starting place for federal legislation therefore appears to be in first establishing an Economic Opportunity Bank and then converting the H.P.E.A. programs into the Basic Tuition Credit portion of student support. To the extent that basic needs, such as curriculum development, financial distress, or construction support, cannot be met through the bank proposal, direct aid to institutions must continue. The levels of subsidy can be substantially cut, but the strategy of multi-target public intervention will continue.

FOOTNOTES

1. Rashi Fein and Gerald I. Weber, Financing Medical Education (New York, etc.: McGraw-Hill Book Company, 1971), p. 60.

2. The 1967 figures are those of Paul Wing and Mark Blumberg, "Operating Expenditures and Sponsored Research at U.S. Medical Schools," Journal of Human Resources, Vol. VI (Winter, 1971), pp. 75-102; and Robert Lathum, The Cost of Medical Education, Doctoral Dissertation, Department of Economics, University of Iowa, 1971. They are analyzed and compared by Owen MacBride, "How Much Does Medical Education Cost?," Health Manpower Policy Discussion Paper No. A3 (Ann Arbor, Michigan: Health Manpower Policy Studies Group, University of Michigan School of Public Health, August 1973). The two recent studies are: Institute of Medicine, National Academy of Sciences, Costs of Education in the Health Professions, Report of a Study, Parts I and II (Washington, D.C., January, 1974); and Association of American Medical Colleges, Undergraduate Medical Education: Elements - Objectives - Costs, Report of the Committee on Financing of Medical Education, Charles C. Sprague, M.D. Chairman (Washington, D.C., 1973). The actual average tuition and fees paid is estimated by the author from the results of a 1970 survey which established average yearly school expenses as $1,758 out of total annual expenses of $5,529. A 1967 survey established 32% of school expenses as going for books and supplies. Pro-rating the 1970 figure by this proportion provides an estimate of $1,200 average actual expenditures for tuition and fees. The 1970 survey was conducted by the Division of Manpower Intelligence and summarized in the testimony of Dr. Kenneth Endicott, Director, Bureau of Health Manpower Education, Departments of Labor and Health, Education, and Welfare Appropriations for 1973; Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Part 4, Washington, D.C.: U.S. G.P.O., 1972, pp. 1046-7. The 1967 data are from Louis Remund Smith and Anna R. Crocker, How Medical Students Finance Their Education (Washington, D.C.: National Institutes of Health, Division of Physician Manpower, January, 1970), p. 20.

3. For examples see the address by Dr. Charles C. Edwards, HEW Assistant Secretary for Health to the annual meeting of the Association of American Medical Colleges, as summarized in Health Manpower Report (Nov. 13, 1973), pp. 4-7; Reuben Kessel, "Higher Education and the Nation's Health: A Review of the Carnegie Commission Report on Medical Education," Journal of Law and Economics, Vol. 15, No. 1 (April, 1972), pp. 115-127; Charles Stewart and Corazon Siddayao, Increasing the Supply of Medical Personnel (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1973).

4. Stewart and Siddayao, op. cit., p. 35.

5. In Fiscal Year 1972 H.P.E.A. institutional support to medical schools totaled $149 million while total federal non-research obligations came to $268 million. Non-research state and local appropriations for the school year 1971-72 add an additional $312 million in public funds.

Sources: unpublished data from Bureau of Health Resources Development, N.I.H.: Executive Office of the President, Office of Management and Budget, Special Analyses: Budget of the United States Government, FY 1974 (Washington, D.C.: G.P.O., 1973); Education Number, Journal of the American Medical Association, Vol. 226, No. 8 (Nov. 19, 1973).

6. Testimony of William G. Anlyan, M.D., Chairman, Executive Council, Association of American Medical Colleges, Health Professions Educational Assistance Amendments of 1971, Hearings before the Subcommittee on Public Health and Environment, Committee on Interstate and Foreign Commerce, House of Representatives (April, 1971), Serial No. 92-11, pp. 534,539.

7. A.A.M.C., op. cit., and National Academy, op. cit. The percentage figures are developed by the author from data presented in the National Academy study.

8. The data for FY 1960 and 1972 obligations to medical schools under H.P.E.A. programs is drawn from unpublished tabulations of the Bureau of Health Resources Development, N.I.H., and U.S. Department of Health, Education and Welfare, Report to the President and Congress: The Health Professions Educational Assistance Program (Washington, D.C., 1970).

9. The figures on federal research expenditure include neither laboratory construction grants nor many research fellowships. Education Number, Journal of the American Medical Association, Vol 226, No. 8 (November 19, 1973). The Office of Management and Budget estimates federal research obligations for FY 1971 as $678 million, almost double the A.M.A. Another $14 million was obligated for the construction of research facilities. Executive Office of the President, op. cit., and Office of the Assistant Secretary for Health and Scientific Affairs, U.S. Department of Health, Education and Welfare, DHEW Obligations to Health Professional Schools Fiscal Year-1971, Vol. 3 (Washington: N.I.H., Office of Associate Director for Program Planning and Evaluation, n.d.).

10. The receipts from state and local appropriations are drawn from Education Number, op. cit. The federal support are obligations for roughly comparable fiscal years. For FY 1972 capitation and financial distress support ran $90.2 and $11.6 million respectively. Special projects, start-up and conversion obligations made for a grand total of $148.5 million in institutional support of medical schools. These figures were pieced together from unpublished Bureau of Health Resources Development data and D.H.E.W. news releases.

11. Higher Education and the Nations Health: A Special Report and Recommendations by The Carnegie Commission on Higher Education (New York: McGraw-Hill Book Company, 1970); Rashi Fein and Gerald I. Weber, Financing Medical Education (New York: McGraw-Hill Book Company, 1971).

12. See, for example, the address by HEW Assistant Secretary for Health, Dr. Charles C. Edwards to the Association of American Medical Colleges. By 1985 present trends will produce between 495 and 520 thousand physicians in the U.S., an indication that "we may well be facing a doctor surplus in this country." Address summarized in Health Manpower Report (Nov. 13, 1973).

13. George E. Wright, "The Efficiency of Federal Subsidies to Medical Education." Health Manpower Policy Discussion Paper Series, No. A8. (Ann Arbor, Michigan: Health Manpower Policy Studies Group, University of Michigan, School of Public Health, May, 1974).

14. Paul J. Feldstein, Financing Dental Care: An Economic Analysis (Lexington, Massachusetts: Lexington Books, D.C. Health and Company, 1973), pp. 116-133.

15. Feldstein, op. cit., p. 91, estimates that in 1970 the rate of return for three years of dental school was a healthy 26.8%. If the scholarships were eliminated and tuition tripled to cover a cancelation of federal subsidies, the rate would fall to 17.4%. This is still an attractive enough investment to fill the schools. The subsidies to dental education have therefore served to raise the private payoff to a dentist by more than 50%.

16. Data calculated from Fein and Weber, op. cit., Table 29, pp. 148-50. Programs designed to educate specifically students from rural areas to serve in rural areas may fare even worse. The Illinois experience with the medical student Loan Fund (1948-1964) indicates that less than 25% of students given special loans and preferred admission status remained in rural practice. Dale Mattson, Donald Stehr and Roy Will, "Evaluation of a Program Designed to Produce Rural Physicians," Journal of Medical Education, Vol. 48, No. 4 (April, 1973), pp. 323-331.

17. Fein and Wber, op. cit., p. 44. See also pp. 35-38.

18. Ibid., pp. 222-23.

19. Carnegie Commission, op. cit., pp. 64-68.

20. H.E.W., Bureau of Health Manpower Education, Health Manpower Education News (March, 1973).

21. The literature on long-term capital markets for hospitals is not well developed. See: Hospital Planning Council for Metropolitan Chicago, Capital Financing of Voluntary Hospitals; The Role of Debt Funding (1971) and Summary Report (1972); Gerald A. Sears, "How Hospitals Could Use Tax-Free Bonds," Modern Hospital, Vol. 107, No. 5 (November, 1966), pp. 129-133; Edward L. Walls "Hospital Dependency on Long-Term Debt," Financial Management (Spring, 1972), pp. 42-47; M. King Deets and Frank Amato, "The Role of the Financial Intermediary in Building Programs," Hospital Progress, Vol. 53, No. 12 (December, 1972), pp. 26-31.

22. Education Number, Journal of American Medical Association, Vol. 226, No. 8 (November 19, 1973).

23. For a compilation of data illustrating these assertions, see: George Entwisle, "Medical School Expenditures and Student Enrollment," Journal of Medical Education, Vol. 46, No. 2 (Feb., 1971), pp. 117-123; George E. Wright, "Why Should We Fund Medical Education?," Health Manpower Policy Discussion Paper Series, No. A6 (Ann Arbor, Michigan: Health Manpower Policy Studies Group, School of Public Health, University of Michigan, March, 1974).

24. Lee W. Hansen and Burton Weisbrod, "A New Approach to Higher Education Financy," Discussion paper 64-70, Institute for Research on Poverty, University of Wisconsin (February, 1970). For application of this proposal to medical schools see Jeffrey L. Harrison and Kent Nash, "A New Approach to the Physician Shortage," Inquiry, Vol. IX, No. 1 (March, 1972), pp. 34-39.

25. The strongest case for the beneficial effects of competition is made by Reuben Kessel, "Higher Education and the Nation's Health: A Review of the Carnegie Commission Report on Medical Education," Journal of Law and Economics, Vol. 15, No. 1 (April, 1972), pp. 115-25. One must not, however, be over optimistic on how much cost saving interschool competition can generate. See George E. Wright, "Why Should We Fund Medical Education?" op. cit.

26. See Henry R. Masch, "Effectiveness of Student Aid Programs Tied to a Service Commitment," Journal of Medical Education, Vol. 46, No. 7 (July, 1971), pp. 575-83.

27. Kessel, loc. cit.

28. For one analysis of the problem see John E. Koehler and Robert L. Slighton, "Activity Analysis and Cost Analysis in Medical Schools," Journal of Medical Education, Vol. 48, No. 6 (June, 1973), pp. 531-50.

29. Some exploratory observations on the potential for interschool competition are included in George E. Wright, "Why Should We Fund Medical Education?" op. cit. For the continuing plight of schools in financial distress see "Training Act Adopts Capitation Approach Sought by AAMC," Hospital Practice, Vol. 7 (Jan., 1972), pp. 186-190.

30. Association of American Medical Colleges, Nation's Resources for Medical Education -- Implications of President's Fiscal Year 1974 Budget Recommendations on Programs of the Nation's Medical Schools (Chicago, April, 1973). In the face of a budget request 15% below 1973 levels and 25% below projected appropriations, the AAMC surveyed 78 schools for their response. Some results: abandonment of new curricula innovations mostly involving experiments in education for primary care in clinical settings; stabilization and reduction of scholarship aid for minority students; elimination of programs involving the school with neighborhood community health programs.

31. "Monetary Plight of Medical Students," The Paeon, The University of Michigan Medical School (October, 1973), p. 11.

32. H.E.W., Office of the Assistant Secretary for Health and Office of the Assistant Secretary for Planning and Evaluation, Health Manpower Legislative Options Paper (Offset, December, 1973), pp. 41-60.

33. Howard Glennerster, Stephen Merrett and Gail Wilson, "A Graduate Tax," Higher Education Review, Vol. 1, No. 1 (1968), pp. 26-38.

34. Milton Friedman, "The Role of Government in Education," R.A. Solo (ed.), Economics and the Public Interest (New Brunswick, N.J.: Rutgers University Press, 1955), pp. 135-143. For a review see K. Shell, F.M. Fisher, O.K. Foley and A.F. Friedlaender, "The Educational Opportunity Bank: An Economic Analysis of a Contingent Loan Program for Higher Education," National Tax Journal, Vol. XXI (1968), pp. 2-45. Marc Nerlove, "On Tuition and the Cost of Higher Education," Journal of Political Economy, Vol. 80, No. 3, Part 2 (May/June, 1972), pp. 178-218.

35. Bernard W. Nelson, Richard Bird, Gilbert Rodgers, "An Analysis of the Educational Opportunity Bank for Medical Student Financing," Journal of Medical Education, Vol. 47 (August, 1972), pp. 603-611. Fein and Weber, op. cit., pp. 223-230.

36. Nelson, Bird and Rodgers, loc. cit.

37. After a two year cost-finding study mandated by Congress, the Institute of Medicine, National Academy of Sciences, Costs of Education in the Health Professions, Parts I and II (Washington, D.C.: January, 1974), estimates the average annual 1972-73 cost in fourteen sample medical schools as $12,650 per student. In 1971 the average expenses to the student for four years of medical school ran over $22,000, and this amount has been steadily growing since 1959 at 6.5% a year. Some $6,000 of this was devoted to present tuition. See an unpublished survey by N.I.H. summarized in the testimony of Dr. Kenneth Endicott, Director of the Bureau of Health Manpower Education, in Department of Labor and Health, Education and Welfare Appropriations for 1973, Hearings before a subcommittee of the Committee on Appropriations, House of Representatives, Part 4 (G.P.O., 1972), pp. 1046-1047.

38. The Bank proposal stipulates .5% of income per 1,000 borrowed.

39. For society as a whole it is never cheaper to give a grant rather than subsidize the interest. The "cost" of the grant is what it could have produced if put to other alternative uses. At a bare minimum it could have been invested and yielded a stream of value determined by the interest rate. To the extent any portion of the grant is later returned by reducing private consumption and allocating the repayments to alternative social uses, the "cost" is reduced.

40. If the program starts in 1975, total M.D. candidate enrollments will approach 50,000, entailing a total disbursement of $250 million a year. The interest not paid the subsequent year (at 8%) would total $20 million. Each succeeding $250 million disbursement would produce an additional annual drain of $20 million so that after ten years $200 million would be lost each year. H.P.E.A. obligations to medical schools ran about $175 million for both FY 1972 and 1973, not counting construction support.

41. Nelsop, Bird and Rodgers, op. cit., p. 605.

42. Between 1967 and 1971 mean physician income increased from $21,104 to $30,505 or at an average annual rate of 11.14%. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, series P-60, issues No. 59 (1969) and No. 85 (1972). The Medical Economics surveys of active physicians under the age of 65 in private practice show an increase in median net income from $34,730 to $43,850 for the same time period or an annual rate of 6.8%. The rapid income growth of incorporated physicians and residents is not included. Medical Economics (Feb. 3, 1969), p. 94, and (Nov. 20, 1972), p. 134.

43. Extrapolation from Current Population Reports, loc. cit.

44. See footnote 37.

45. Association of American Medical Colleges, Undergraduate Medical Education: Elements - Objectives - Costs, op. cit., surveyed ten medical schools for 1972 and found the annual full costs varying from $16,300 to $26,400 with an average of $20,367. These costs include a generous prorating of research costs, but instruction alone varies between $5,700 and $10,200. In contrast the Institute of Medicine, op. cit., Table 33, p. 62, and Table 52, p. 90, found total annual education costs in fourteen schools ranging from $6,900 to $13,650. A certain portion of these costs were offset by research and patient care revenues lowering the range of net education expenditures to $5,150-$14,150.

46. New York Times (March 15, 1974), p. 15.

47. See the addresses of former H.E.W. Secretary Elliot Richardson, Senators Warren Magnuson and Edward Kennedy to the A.A.M.C. 1971 annual meeting, reprinted in Journal of Medical Education. Vol. 47, No. 1 (January, 1972), pp. 3-22.